CLAIM + DETAILED DESCRIPTION

[Claim(s)]

[Claim 1] The refrigerator equipped with a control means to control in the refrigerator which has a compressor and the fan which cools this compressor so that only a certain set period drives said fan also during a stop of said compressor.

[Claim 2] The refrigerator equipped with a certain control means to carry out definite-period-of-time operation, to stop the definite-period-of-time aforementioned fan after that, and to operate said fan again after that for said fan in the refrigerator which has a compressor and the fan which cools this compressor while operating said compressor.

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to drive control of a frozen refrigerator and the fan which cools especially an electric compressor.

[0002]

[Description of the Prior Art] The partial notch part side explanatory view of the conventional frozen refrigerator in which drawing 14 was shown at JP,S55-114469,U, and drawing 15 are the circuit explanatory views of the conventional example of drawing 14 . The machinery room where the main part of a frozen refrigerator (henceforth a refrigerator) and 2 arrange the backwall of a main part 1, 3 arranges a machinery room cover, and, as for one, 4 is arranging the electric compressor (henceforth a compressor) and the fan 6 in an inside, the compressor with which 5 made the inside of a shell high pressure, and 6 are fans which cool a compressor 5 among drawing 14 . Seven are a microcomputer (henceforth a microcomputer) which is the control device with which a power supply and 8 control the relay for a drive of a compressor 5 and a fan 6, 9 controls the temperature-inside detection sensor of a refrigerator 1, and 10

controls these operation among drawing 15 . Next, operation of the refrigerator of the conventional example is explained using drawing 14 row drawing 15 . If the temperature in the refrigerator 1 detected by the temperature-inside detection sensor 9 becomes beyond a predetermined value, in order to cool the inside of a refrigerator 1 The temperature of a compressor 5 rises too much, in order to prevent that a life is shortened, a fan 6 drives, cold is sent, and a compressor 5 is cooled at the same time the relay 8 for a drive is turned on by control of a microcomputer 10 and a compressor 5 drives by it. Moreover, the front side of the bottom of the conventional refrigerator is explained using drawing 16 and drawing 17 . Drawing 16 and drawing 17 are the figures showing the conventional refrigerator shown in JP,S63-175791,U. The outer packaging of the refrigerator in which 17 consists of a steel plate in a figure, the front beam with which 18 fixed both ends to the outer packaging 17, The sole plate which fixed 19 to the upper surface of the front beam 18, the evaporating dish which 20 dedicated to the sole plate 19 lower part, The cover attached so that it may stick to the front beam 18 and an outer packaging, since the evaporating dish heat dissipation pipe with which 21 equipped the undersurface of the evaporating dish 20, and 22 insulate the sound generated from the compressor (not shown) installed behind [lower] the sole plate 19, 23 is a heat dissipation pipe extended and stuck to the bottom front part from the side of an outer packaging 17, and it is perpendicularly bent from the side so that it may crawl to a sole plate 19. Thermal conductivity is heat conduction tapes, such as a good aluminum tape, and 24 is fixing the heat dissipation pipe 23 to a sole plate 19.

[0003] Next, operation is explained. Since the front beam 18 is covered with the cover 22, the flow of the air of the sole plate 19 lower part is getting worse. The defrosting water which gathered in the evaporating dish 20 becomes steam with the heat of the evaporating dish heat dissipation pipe 21. Although a dewing phenomenon is produced on the undersurface of a sole plate 19, rust will be generated in the edge part of a sole plate 19 or the front beam 18 or the dew which adhered at the sole plate 19 grade will trickle into a floor when the sole plate 19 by which this steam was comparatively cooled by the heat conduction out of a refrigerator is contacted, and especially the convection of air is bad Since the heat of the ******** heat dissipation pipe 23 gets across to a sole plate 19 effective in a sole plate 19 or front beam 18 grade on the thermally conductive tape 24, it is difficult to carry out dewing. When there is a fan 6 for cooling of a compressor 5 like the conventional refrigerator of a precedent, while [moreover,] the compressor is driving [since the fan 6 is driving, there is a convection of air, and since a heat dissipation pipe also has a high temperature, do not generate dewing on the undersurface of a sole plate, but] When outdoor air temperature was low, the operating efficiency of the compressor 5 was low, while the compressor 5 was not driving, a fan 6 was not driven, either, and since a heat dissipation pipe did not have so high a temperature, either, depending on the variation in how to stick a thermally conductive tape, the heat of the heat

dissipation pipe was not transmitted effective in a sole plate etc., but dewing may have been carried out to the sole plate etc.

[0004]

[Problem to be solved by the invention] Since the conventional refrigerator is constituted as mentioned above, the operating efficiency of compressors, such as the time of the low open air, is low. Since a fan was not driven, either, while the compressor is not driving, the convection of the air near a sole plate carried out dewing to the undersurfaces, such as a sole plate, bad, rust was generated in the edge part of a sole plate or a front beam, and there was a problem of dew trickling into a floor.

[0005] It aims at abolishing that the convection of air is made in near a sole plate as for this invention, and carry out dewing to a sole plate or a front beam, and rust is generated or dew trickles it into a floor even while it is not made in order to cancel the above problems, and the compressor is not driving.

[0006]

[Means for solving problem] The refrigerator of Claim 1 concerning this invention is equipped with a control means to control so that only a certain set period drives said fan also during a stop of said compressor, in the refrigerator which has a compressor and the fan which cools this compressor.

[0007] In the refrigerator which has a compressor and the fan which cools this compressor, the refrigerator of Claim 2 concerning this invention is equipped with a certain control means to carry out definite-period-of-time operation, to stop the definite-period-of-time aforementioned fan after that, and to operate said fan again after that for said fan at the same time it operates said compressor.

[0008]

[Function] When outdoor air temperature is low, dewing phenomena of the refrigerator of Claim 1 in this invention, such as a sole plate, are lost.

[0009] The refrigerator of Claim 2 in this invention can remove the dew attached to the sole plate.

[0010]

[Working example]

Below work-example 1. explains the work example 1 of this invention about a figure. In drawing 1 and 2, a microcomputer and 11 show 12, the relay for a fan drive and 13 show 15, and, as for the relay for a compressor drive, and 10, 8a shows the drive circuit part of the relay for a compressor drive, and the relay for a fan drive partial pressure resistance of the temperature-inside detection sensor 9 and the outdoor-air-temperature detection sensor 14, and 16, respectively. Among each figure, the same or a considerable constituent factor expresses with the same mark also in said conventional example, and duplication explanation

is omitted.

[0011] Next, operation is explained using drawing 3 - the flow chart of six. Drawing 3 shows a main program, performs the initial setting 101, temperature inside, and the outdoor-air-temperature input 102, performs the compressor control subroutine (SUB1) 103 and the fan control subroutine (SUB2) 104, returns to Step 102, and repeats this. Drawing 4 is the flow chart of a compressor control subroutine (SUB1), if its temperature inside is high, it will make a compressor 5 turn on (Steps 110 and 120), when temperature inside is low, a compressor 5 is made to turn off (Steps 130 and 140), and it returns to a main program. Drawing 5 shows the flow chart of a fan 6 control subroutine (SUB2). Step 210 compares first whether outdoor air temperature is high, when high, it progresses to Step 220, and in order to cool a compressor 5, a fan 5 is made to turn on by the fan drive relay 11, when the compressor 5 turns on there. Conversely, a fan 6 is made to turn off when a compressor 5 is OFF. Moreover, when outdoor air temperature is low and a compressor 5 is ON at Step 260, a fan 6 is made to turn off at Step 210 (Step 270). Conversely, when a compressor 5 is OFF, it progresses to the subroutine (SUB3) of Step 280. In addition, 1 is set to the initial flag F after progressing to Steps 230, 250, and 270 other than SUB3. Drawing 6 shows the flow chart of Step 280 (SUB3) of drawing 5 . 1 is seen whether set to the initial flag F at Step 310. When 1 is set, 0 is put into the initial flag F (Step 320), a reset start is carried out (Step 370) and the return of the timer T is carried out. When the initial flag F is 0, it progresses to Step 330 and they are Timer T and a certain definite period of time T1. It compares. T1 A return is carried out when not having passed. T>T1 A fan 6 is made to turn on and cases are 340 and StepT1 at 350. Existing definite period of time T2 It is compared whether it passed or not. T2 When not having passed, a return is carried out as it is. T>T2 A case makes a fan 6 turn off (Step 360), progresses to Step 370, and carries out the reset start of the timer T again, and a return is carried out. The above-mentioned cycle is repeated and cooling operation is performed.

[0012] As explained above, when this work example 1 has high outdoor air temperature and the compressor 5 turns on, a fan 6 is made to drive for that cooling. Conversely, when outdoor air temperature is low, the definite period of time which exists at the time of compressor 5OFF is made to drive a fan 6. That is, when outdoor air temperature is low, a fan 6 prevents generating the convection of air near the refrigerator bottom and carrying out dewing to sole plate 19 grade.

[0013] Only when outdoor air temperature was low and the compressor 5 turned off, the fan 6 was made to turn on and turn off to a certain timing with a microcomputer 10 in work-example 2., in addition the above-mentioned work example 1, but you may make a fan 6 turn on and turn off regardless of ON of a compressor 5, and OFF.

[0014] Although ON/OFF control of a fan 6 was carried out with outdoor air temperature in work-example 3. and the above-mentioned work example 2, regardless of outdoor air

temperature, you may certainly perform ON/OFF control of a fan 6 at the time of compressor 5 stop.

[0015] Since the convection of the air at the bottom of a refrigerator is good, it becomes difficult to carry out dewing also of the time of the low open air to a sole plate 19 according to work-example 4. and the above-mentioned work examples 1-3. For this reason, since it becomes unnecessary to tell the heat of the heat dissipation pipe 23 to a sole plate 19, the ********** heat dissipation pipe 23 and the heat conduction tape 24 which is sticking it can also be lost to a sole plate 19.

[0016] Below work-example 5. explains the work example 5 of this invention using drawing 8 - 13. Drawing 8 is the whole work-example 5 composition figure of the refrigerator by this invention. The compressor with which 5 carries out compression circulation of the refrigerant, the condensator with which 32 evaporates this refrigerant, The fan who circulates the cold which made 33 cool with this condensator 32, the cold storage air course by which 35 leads a part of this cold to cold storage 34, The damper which 36 opens and closes this air course 35, and controls the cold to cold storage 34, The defroster heater which combs the frost to which 7 was attached to the condensator 2, F thermo sensitive register with which 39 detects the temperature of a freezer compartment 38, Since R thermo sensitive register with which 40 detects the temperature of cold storage 34, and 6 end a machinery room fan and 43 terminates a defroster, the DEF thermo sensitive register which detects the temperature of a condensator 32, and 44 are control boards which control the whole refrigerator, and the control board 44 consists of a control means 45 and control method determination 46 here.

[0017] Next, the contents of the control means 45 are explained using drawing 9 . There are switches 48, 49, and 50 as a means by which the power supply 47 of electric parts has been entered by drawing 9 , and this is a point of contact which turns on and off a compressor 5, a fan 33 and a damper 36, and a machinery room fan, respectively. It is determined by the microcomputer of 10 to which [this] this point of contact is driven with coils 51, 52, and 53, respectively, the energization to these coils is energized in the drive circuits 54, 55, and 56, and it energizes. As an input of a microcomputer 10, they are each thermo sensitive registers 39, 40, 42, and 43. 28-31 are partial pressure resistance which is carrying out partial pressure of a thermo sensitive register and the voltage here.

[0018] Next, the composition of the machinery room fan operation control determination means 46 is explained using drawing 10 . The operational status of a compressor 5 is detected with the compressor operational status detection means 65, and it judges cutting and changing to operation from a stop. From the time of a compressor 5 being in operational status, a timer is counted by a timer 66 and it opts for a final machine fan's control with the machinery room fan operation determination means 67 from the time.

[0019] Next, the contents of the machinery room fan operation control determination means 46

are explained in detail by a flow chart using drawing 11 . First, the operational status of a compressor is detected at Step 460. While a compressor 5 stops, the machinery room fan 6 makes it stop. Next, if it is less than [t1 hour], the machinery room fan 6 will be made to operate after compressor operation at Step 461, while a compressor 5 operates. Next, if it is more than t1 hour and less than [t2 hour] at Step 462, the machinery room fan 6 will be stopped, and if it is more than t2 hour, the machinery room fan 6 will be made to operate. The machinery room fan 6 is attached as shown in drawing 12 , and [with the machinery room fan 6] The agitated air has lowered the temperature of the compressor 5 while the steam which went up from the defroster water (drain) of the condensator 32 collected on the evaporating dish 20 which is shown in drawing 13 as for the surroundings as steam in the machinery room 4 prevents dewing a sole plate 19 as waterdrop.

[0020]

[Effect of the Invention] This invention does so the effect indicated below. In the refrigerator which has a compressor and the fan which cools this compressor, since the refrigerator of Claim 1 was made the composition equipped with a control means to control so that only a certain set period drives said fan also during a stop of said compressor, when outdoor air temperature is low, dewing phenomena of it, such as a sole plate, are lost.

[0021] In the refrigerator in which the refrigerator of Claim 2 has a compressor and the fan which cools this compressor Since said fan was made the composition equipped with a certain control means to carry out definite-period-of-time operation, to stop the definite-period-of-time aforementioned fan after that, and to operate said fan again after that while operating said compressor, the dew attached to the sole plate can be removed.

[Translation done.]